



March 3, 2006

EX PARTE NOTICE

Electronic Filing

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW, Room TW-A325
Washington, D.C. 20554

Re: AU Docket No. 06-30

Dear Ms. Dortch:

On March 2, 2006, Tom Sugrue, Kathleen O'Brien Ham, and Patrick Welsh, all representing T-Mobile USA, Inc. ("T-Mobile"), accompanied by Peter Cramton, Professor of Economics at the University of Maryland, met with Leslie Marx, Chief Economist of the Federal Communications Commission, and Walter Strack and Evan Kwerel of the Wireless Telecommunications Bureau to discuss the above-referenced proceeding.

T-Mobile made an oral presentation, summarized in the attached slide deck and letter from Peter Cramton to Leslie Marx dated March 3, 2006. During the discussion, T-Mobile emphasized that it would be unwise for the FCC to experiment with concealing bidder identities in the most important spectrum auction in a decade. T-Mobile's main points were as follows:

- The FCC has an extremely successful record over the last ten years in running major auctions using full transparency. There is no empirical evidence that revealing bidder identities and bidding information has reduced auction revenues or harmed efficiency.
- Concealing bidder identities would unnecessarily create the risk of information leaks, which could jeopardize the integrity of the auction, potentially leading to its cancellation and litigation.
- The costs of full transparency quickly fall with the level of competition. Indeed, if the FCC chooses to conceal bidder identities and bidding information, it should do so only if the initial eligibility ratio at the upfront payment deadline is less than two. There is strong empirical evidence that an auction with an eligibility ratio of two or more will be actively competitive. In such a case, the benefits of transparency clearly outweigh any potential costs.

Ms. Marlene H. Dortch

March 3, 2006

Page 2 of 2

Pursuant to section 1.1206(b) of the Commission's rules, an electronic copy of this letter is being filed.

Sincerely,

/s/ Thomas J. Sugrue

Vice President - Government Affairs

T-Mobile USA, Inc.

cc: Leslie Marx

Walter Strack

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3 March 2006

Leslie Marx, Chief Economist
Federal Communications Commission
445 12th St SW
Washington DC 20554

Dear Leslie:

I wish to address two matters related to the comments filed in response to the Public Notice DA 06-238, "Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006:" the Reitsma et al. paper on self-enforcing strategic demand reduction and the reply comments of Milgrom and Rosston and the FTC economists.

Demand Reduction

The CAPCP comment¹ cited Reitsma et al. (2002), hereafter "RSCL," which describes an algorithm for demand reduction—a bidding strategy of reducing demands before the bidder reaches its marginal valuation for spectrum (see Ausubel and Cramton 2002). In discussions with FCC staff, I have been told that the RSCL paper was one of the motivations for moving from full transparency, since it provides "an algorithm for collusion." Such a characterization of the paper is wrong. Here I will explain what the paper does, and what it does not do.

RSCL consider two types of bidding, straightforward bidding and a particular demand reduction strategy. Straightforward bidding is a bidding strategy in dynamic auctions in which, in each round, the bidder bids the minimum bid on the package of items that maximizes its profits given the bidder's values, budget constraint, and the current prices.² Demand reduction is a strategy in which the bidder stops bidding on a license before the license price reaches the bidder's incremental value for the license. A third strategy, equilibrium bidding, is the strategy in which each bidder bids unilaterally to maximize profits given the anticipated bidding behavior of the other bidders for the remainder of the auction.

RSCL show that in terms of bidder profits a particular demand reduction strategy does better than straightforward bidding. This is not surprising, and indeed *it has to be the case, regardless of whether the auction is transparent or anonymous*. In either case, straightforward bidding is not consistent with equilibrium bidding—equilibrium bidding always entails some demand reduction. I prove this quite generally in my paper with Larry Ausubel on demand reduction (Ausubel and Cramton 2002). The prices that result from straightforward bidding are therefore

¹ "Comments on the Auctions of Advanced Wireless Services by the FCC," Center on the Study of Auctions, Procurements, and Competition Policy at Penn State University, FCC Docket AU 06-30, 14 February 2006.

² RSCL call this the knapsack strategy, because the optimization is a knapsack problem (see Cramton et al. 2006).

not a relevant benchmark. Straightforward bidding results in higher prices than would occur in any outcome in which each bidder seeks unilaterally to maximize profits.

RSCL do not show to what extent demand reduction is mitigated by withholding bidder identities. This is an open question, although my paper with Larry Ausubel proves that demand reduction occurs in any bidding equilibrium with or without full transparency.

In my work advising bidders, I frequently explain the strategy of demand reduction and the phenomena of the winner's curse. This is and will be the case regardless of whether the FCC's auction is fully transparent or anonymous. Demand reduction is required of any profit maximizing bidder, regardless of the information policy. The incentives for demand reduction stem from uniform-pricing (similar licenses selling for similar prices as a result of arbitrage), and not from the information policy.

The specific demand reduction strategy presented by RSCL, although perhaps of interest to the computer science research community, cannot be implemented in practice. First, real bidders do not arrive at the auction knowing values for particular licenses. Valuation information is continually refined and developed throughout the auction process. This fact is a major reason why a dynamic auction format is required. In addition, there are important value interdependencies. Licenses cannot be valued individually but only in combination with other licenses. Similarly, there are externalities that arise from market structure, interference, and other issues, which imply that values depend on who wins which licenses. Finally, real bidders do not have a single and fixed budget constraint. Rather budget constraints evolve during the auction and are much more complicated than a single number.³ Simply put, the RSCL demand reduction strategy is not relevant in practice.

Reply Comments Recommending Secrecy

Now let me turn to the reply comments of the FTC economists⁴ and Milgrom and Rosston⁵. Both of these comments rightly recognize that there are both costs and benefits to full transparency. Both comments tend to downplay the benefits and focus primarily on the costs of full transparency. They thus conclude—wrongfully I believe—that the FCC should abandon full transparency in the AWS auction. These commentators and a few brief academic commentators, are alone in this position, aside from Verizon's inconsistent view on information policy.⁶

I will not repeat the arguments already presented in my declarations. Rather, let me emphasize four important points, which neither the FTC nor Milgrom-Rosston recognize.

³ In advising more than twenty-five companies in high-stake simultaneous ascending auctions, I have never once encountered a bidder with a fixed budget constraint, nor have budget constraints ever been represented by a single number.

⁴ "Reply Comment of the Staff of the Bureau of Economics of the Federal Trade Commission," FCC Docket AU 06-30, 28 February 2006.

⁵ "Reply Comments of Paul Milgrom and Gregory Rosston," FCC Docket AU 06-30, 28 February 2006.

⁶ "Comments of Verizon Wireless," FCC Docket AU 06-30, 14 February 2006. Verizon supports full transparency in the package auction (where presumably it hopes to acquire its licenses at a steep discount), and supports an anonymous auction for the licenses sold using the SMR format.

First, neither the FTC nor Milgrom-Rosston, provide any empirical support for their assertions that full transparency has reduced auction revenues or harmed efficiency. In contrast, through a series of published research papers, I have studied many of the FCC's major auctions using full transparency. In this work over more than ten years, informed not just by data but by extensive participation on over twenty-five bidding teams, I have yet to find *any* evidence that the bidding strategies enabled by full transparency have undermined efficiency; rather I conclude that the FCC's SMR auction format is highly efficient and full transparency is at least part of the explanation. Moreover, although there are a few exceptional instances where retaliatory strategies have appeared to reduce revenues, such as in the DEF auction, there is *no* evidence that the overall impact of full transparency has been to reduce revenues. Indeed, there is substantial evidence that revenues in the FCC's auctions have been high, representing a very large share of value (arguably more than 100%), and the UK UMTS auction and the Nextwave auction (Auction No. 35) provide examples where transparency increased revenues (see footnote 8).

Second, the problem of leaks is real and important in this type of auction if the "secrecy" approach is used. The commenters are right that many other high-stake auctions are done under secrecy; however—and this is critical—none of these high-stake auctions conducted under secrecy require secrecy for a period of many weeks.⁷ Indeed, the vast majority of these auctions are conducted in a single day. The New Jersey auction for basic generation service is one of the few auctions conducted under secrecy that lasted for multiple days. If the FCC were to conduct the AWS auction under secrecy it largely would be breaking new ground.

The FCC's own experience with secrecy has been less than auspicious. In the very first SMR auction, the Nationwide Narrowband PCS auction conducted in July 1994, the FCC conducted an "anonymous auction," largely in response to bidder concerns about predatory bidding by competitors.⁸ The secrecy in this auction was a complete failure (Cramton 1995). The large bidders quickly figured out who was who. Only the smaller bidders and the press were in the dark. During the auction the FCC *inadvertently* released a round report with bidder time-stamps, which made it easy for even the small bidders to figure out bidder identities. Although I am confident that the FCC has learned important lessons from the experience that would prevent this mistake going forward, I am quite concerned about the ability of the FCC, the bidders, and the investment community to maintain secrecy in an extremely high-stake auction over a period of many weeks, if not months. Indeed, I would be shocked if secrecy were sustained. A much more likely outcome is that there are many leaks, especially through the investment community, which enable at least large bidders to have a sufficiently clear picture so that retaliatory strategies in major markets will still be adopted with about the same frequency as we see in the FCC's fully transparent auctions, that is to say, extremely rarely.

⁷ A conservative estimate sets the duration of the AWS auction at six weeks, and the collusion restrictions begin on the deadline for filing short forms (typically 6 to 8 weeks before auction start) and end on the deadline for down-payments (another 3 to 6 weeks after auction end), for a total "quiet" period of at least four months.

⁸ Experience has shown that these concerns about predatory behavior in the spectrum auctions are misplaced. I am aware of predatory bidding occurring in only a few instances (Cramton 2006). These are the exceptions that prove the rule that bidders are extremely hesitant to spend any shareholder money to raise rival's costs in spectrum auctions.

Preventing leaks through the investment community is problematic at best. Large investors have a need to know, since they are typically involved in the decision making while the auction is taking place. Confidentiality rules could limit leaks somewhat, but it is naïve to think that leaks could be prevented over such a long period of time when both the stakes and the number of people with knowledge is so large.

Third, the benefits of transparency are especially strong when auctioning encumbered spectrum, as in the AWS auction. The commercial clearing of microwave links is done through negotiation as in the PCS auctions. These links often cross spectrum blocks, which introduces an externality in the clearing process. A bidder on one block cares about how eager the bidder on the adjacent block is to clear the link. The clearing problem is exacerbated when the microwave license is held by a carrier bidding in the auction, as is often the case in the AWS bands. In this case, transparency may reduce the use of anticompetitive strategies in which a carrier attempts to take advantage of its microwave license holdings.

Fourth, none of the commentators have made the important point that, although there are costs and benefits to full transparency, *the costs quickly decline with the extent of competition*. Retaliation strategies that may support low-price equilibria simply do not work when there is sufficient competition. Any examination of the FCC's many competitive auctions will bare this out. For example, in the famous C-block auction, I was advising Pocket Communications, the second-largest bidder in the auction. In that auction, the auction team used sophisticated retaliatory strategies, as well as other demand reduction strategies, in an attempt to reduce the prices paid for spectrum. As the outcome confirms, these strategies were completely ineffective despite their common use by the large sophisticated bidders, such as Pocket and Nextwave. Given that the costs of full transparency quickly fall with the level of competition, but the benefits do not, it seems clear that if secrecy is considered, it should only be considered in auctions where competition is weak.

Fortunately, the FCC has an excellent measure of competition: the initial eligibility ratio⁹ (Cramton 1997). The FCC's own experience is that auctions with eligibility ratios of two or more have robust competition (for example, the DEF auction had an eligibility ratio of 1.68, much lower than the other PCS auctions; the C auction and the Narrowband PCS auctions were all above 2; the AB auction was on the margin of competitive at 1.93). By way of comparison with other high-stake auctions, the eligibility ratio (called the coverage ratio in finance) for US Treasury auctions typically has averaged about 2. Thus, I recommend that if the FCC does adopt an information policy with an anonymous auction, that the auction be fully transparent if the initial eligibility ratio exceeds 2. This would prevent the FCC from losing the substantial benefits of full transparency in situations where I suspect there is consensus that the costs of full transparency are small.

While I agree that the FCC should continue to study information policy in its auctions, it would be unwise to experiment with secrecy in the most significant spectrum auction in a

⁹ The initial eligibility ratio is calculated from the sum of the upfront payments. Thus, it is known by the FCC at the upfront payment deadline, typically three weeks before the auction is to start. Each upfront payment provides gives the bidder its initial eligibility in MHz-pop. The eligibility ratio is total eligibility, summing over all bidders, divided by the total MHz-pop being sold in the auction. An eligibility ratio of 2 means that there is twice as much demand as the supply available.

decade. In the past, the FCC has limited experimentation to less critical auctions. Conducting the narrowband PCS auctions in 1994 before the major broadband auctions in 1995 and 1996 is a good example of effective implementation strategy. The FCC should continue to follow this sound approach. Experiment on more minor auctions; stick with the highly successful and well-tested fully-transparent SMR auction format for the AWS auction.

Sincerely yours,

A handwritten signature in black ink that reads "Peter Cramton". The signature is written in a cursive, flowing style.

References

- Ausubel, Lawrence M. and Peter Cramton (2002), "Demand Reduction and Inefficiency in Multi-Unit Auctions," University of Maryland Working Paper 9607, revised July 2002.
- Cramton, Peter (1995), "Money Out of Thin Air: The Nationwide Narrowband PCS Auction," *Journal of Economics and Management Strategy*, 4, 267-343.
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- Cramton, Peter, Yoav Shoham, and Richard Steinberg (2006), *Combinatorial Auctions*, Cambridge, MA: MIT Press.
- Reitsma, Paul S. A., Peter Stone, Janos A. Csirik, and Michael L. Littman (2002), "Self-Enforcing Strategic Demand Reduction," in *Agent Mediated Electronic Commerce*, J. Padget, O. Shehory, D. Parkes, N. Sadeh and W. Walsh (eds.), Springer, 289-306.

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**T-Mobile Comments on
Auction No. 66 Public Notice
*March 2, 2006***



- **T-Mobile is pleased the FCC has decided to commence the AWS Auction on June 29, 2006, as announced**
- **AWS spectrum is critical to continued competition and product choice in the marketplace for advanced services**
- **FCC Commissioners individually have recognized the importance of commencing the auction as soon as possible**
- **US Cellular, RTG, Alltel, and CTIA also support a June 29 auction date**



- **The AWS Auction is the most significant CMRS auction in a decade in terms of number of licenses, total spectrum, and projected revenues. It is too important to risk innovation or experimentation**
- **Likely to be a highly competitive auction, which is the best safeguard against problems**
- **T-Mobile supports auction procedures that have precedent in previous auctions and are consistent with best practices**



- **The FCC should auction the AWS licenses in a single auction with full transparency as to license selections, upfront payments, and round-by-round results**
- **Only one potential bidder (Verizon) advocates concealing bidder information—virtually every other commenter, representing the full spectrum of the industry, supports transparency**
- **Similarly, only one potential bidder (Verizon) supports package bidding—most potential bidders support a single auction without package bidding**



- **Fully “road tested”**
- **Provides small and large bidders with the maximum degree of flexibility to consider and bid on alternatives**
- **Does not present the complexity or difficulties associated with package bidding**
- **Eligibility management between two auctions and arbitraging between licenses would be extremely difficult**
- **“SMR auction format, together with a bandplan which offers bidders the option to bid on several blocks of large regional licenses, will provide bidders with the opportunity to create efficient aggregations of licenses”**
- **Holding auctions sequentially does not solve problem**



- **Promotes rational bidding that can result in higher auction revenues**
- **Disclosing license selections, upfront payments, and round-by-round results is a “tried-and-true” practice**
- **Could disadvantage bidders, such as T-Mobile, with known spectrum positions**
- **Avoids information leaks during this important auction**
- **Ironically, concealing bidder information could chill participation in the auction**

- **T-Mobile supports other FCC standard proposals in public notice:**
 - \$0.05/MHz/pop for upfront payments and minimum opening bids
 - Two-stage activity rule (80% in Stage One and 95% in Stage Two)
 - Bidding increments in any of the nine proposed amounts
 - Three activity rule waivers and bid withdrawals in two rounds
 - Setting interim and additional default penalties each in the amount of 10% of applicable bids



- **Auction No. 66 is too important to experiment with package bidding or concealment of bidder information**
- **FCC should experiment with these methods in a smaller, less high-profile auction**
- **Most importantly, the FCC should conduct Auction No. 66 of AWS spectrum on schedule so carriers like T-Mobile can meet consumer demand for an increasing range of affordable wireless services**